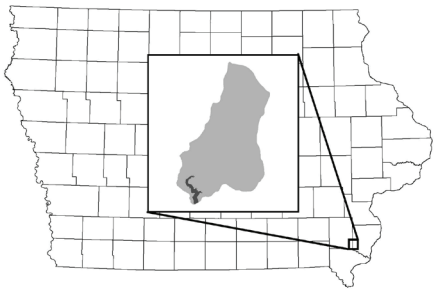
clean water starts with you.
IOWA DNR WATERSHED IMPROVEMENT

Lake Geode



Pollutant: *Bacteria and high pH*

Pollution Sources:

Bacteria: Livestock manure, septic systems and geese
pH: Phosphorus from soil erosion, fertilizer and manure

What's wrong with Lake Geode?

Animal and human waste can carry disease-causing organisms into the water. If ingested, these organisms can make people sick. Testing for *E. coli* bacteria can indicate the presence of harmful organisms in the water.

Due to high *E. coli* levels measured at the Geode State Park beach, swimming advisories have been posted on multiple occasions in recent years.

Additionally, excess phosphorus reaching the lake causes algae to grow rapidly. This has led to elevated pH levels that are harmful to aquatic life. High *E. coli* concentrations and pH levels both prevent Lake Geode from meeting state-designated water quality standards.

What is causing the problem?

Pollution from animal waste, septic systems, geese, soil erosion and fertilizer loss all contribute to water quality problems in Lake Geode.

High *E. coli* concentrations are attributed primarily to cattle manure in streams, failing septic systems, manure application and geese at the swimming beach.

Primary contributors to high pH include phosphorus attached to eroded soil, synthetic fertilizer and animal manure.

Lake Geode's swimming beach

The DNR tests waters throughout Iowa to make sure they are meeting state water quality standards. Those standards are in place to protect drinking water, aquatic life and recreational uses, like swimming. When a stream or lake doesn't meet those standards, the stream or lake is placed on the state's impaired waters list. The DNR then creates a plan that outlines ways Iowans can help improve the water quality in their community's lakes and streams.

DNR needs your input

Every Iowan needs the help of their fellow citizens and watershed groups to improve water quality in their community. If you or your group would like to meet with a DNR staff member to discuss water quality, please contact Jeff Berckes at (515) 281-4791 or Jeff.Berckes@dnr.iowa.gov

DNR

For more information on water quality improvement plans, please visit http://watershed.iowadnr.gov

What can be done to improve Lake Geode?

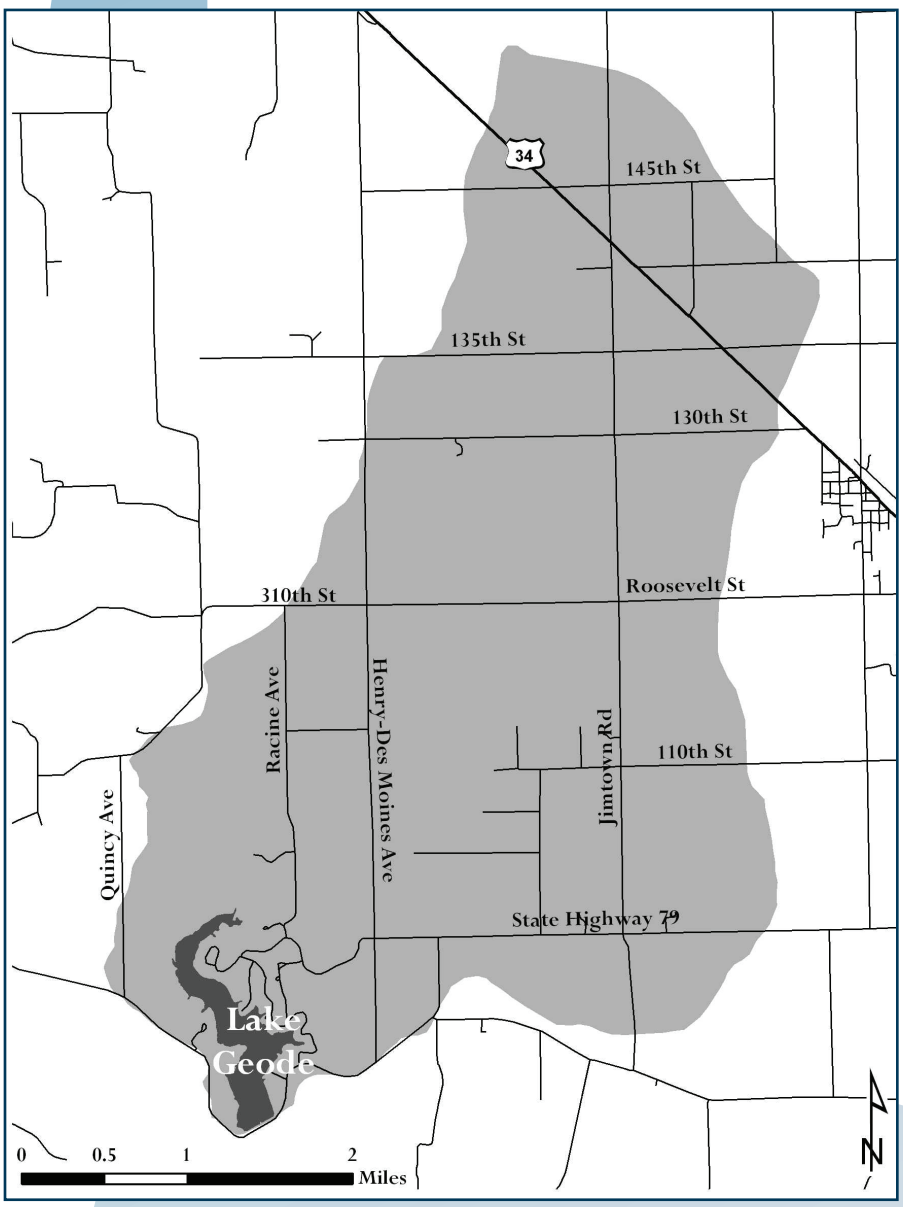
The goal is to improve the water quality, restoring the lake's health for safe recreational use. Sources of bacteria and phosphorus must be reduced to reach this goal.

Using research data and public input, the DNR is developing a water quality improvement plan (also known as a TMDL, or Total Maximum Daily Load) to reduce the amount of pollutants reaching Lake Geode.

A water quality improvement plan represents a guide to local communities on how they can improve water quality in their watershed.

The DNR has performed background research and can offer additional technical assistance and grant funding opportunities.

However, it is ultimately the responsibility of the watershed residents and Lake Geode patrons to take action and clean up Lake Geode.



The DNR has suggested the following conservation practices for the Lake Geode watershed:

- Decrease the population of geese near the beach at Geode State Park.
- Remove animal waste from the beach using groomer equipment.
- Implement a variety of conservation practices, such as no-till farming, riparian buffers and grass waterways
- Eliminate livestock access to streams
- Practice strategic fertilizer and manure management
- Promote septic system inspection and maintenance programs.

The map at left shows the Lake Geode watershed shaded in gray. A watershed is an area of land that drains into a body of water. In this case, all land shaded in gray drains into Lake Geode.